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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,028	07/16/2003	Stephen G. Evangelides JR.	9005/9	1173
27774	7590	05/20/2005		EXAMINER
				LI, SHI K
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/621,028	EVANGELIDES ET AL.
	Examiner	Art Unit
	Shi K. Li	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 02 March 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-51 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-51 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

There are three claims with claim number 41. The second claim 41 has been renumbered as claim 42 and the third claim 41 has been renumbered as claim 43.

Misnumbered claims 42-49 have been renumbered 44-51, respectively.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 6-8, 11-12, 17-19, 22-23, 28-30, 33-34, 39, 44-46 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Way (U.S. Patent Application Pub. 2002/0021464).

Regarding claims 1, 12, 23, 34 and 39, Way discloses in FIG. 1 an optical transmission system comprising a plurality of transponders 24, a WDM multiplexer 26, amplifiers 52 and optical transmission fiber 16. The transponders (optical transmission terminal of instant claim) define a first interface for connecting with optical transmitter 20 and a second interface for

connecting with WDM multiplexer 26. The WDM multiplexer 26 and amplifier 52 define a third interface for communicating with the second interface and a fourth interface for communicating with next span or receiver. WDM multiplexer and amplifier 52 (signal processing unit of instant claim) transform optical signals between the second and fourth interfaces, i.e., the first and second optical layer transport protocols.

Regarding claims 6, 17, 28 and 44, Way teaches WDM multiplexer 26 for generating WDM signal 30. Amplifier 52 amplifies and outputs a WDM signal.

Regarding claims 7-8, 11, 18-19, 22, 29-30, 33, 45-46 and 49, Way teaches an optical gain element (amplifier) 52.

4. Claims 1-2, 5-8, 11-13, 16-19, 22-24, 27-30, 33-34, 39-40, 43-46 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Kasahara (U.S. Patent Application Pub. 2002/0131115 A1).

Regarding claims 1, 12, 23, 34 and 39, Kasahara discloses in FIG. 1 an optical transmission system comprising a plurality of transmission/reception devices 21, 22, ..., 2N (optical transmission terminal of instant claim), a WDM multiplexer/demultiplexer 2a, optical amplifier 2b (signal processing unit) and transmission path 3. The transmission/reception devices define first optical interface to the transmission devices 11, 12, 1N, and second optical interface to WDM multiplexer/demultiplexer. The WDM multiplexer/demultiplexer and amplifier define third optical interface connecting to the second optical interface, and fourth optical interface to the transmission path.

Regarding claims 2, 13, 24 and 40, Kasahara teaches in FIG. 1 bi-directional interfaces.

Regarding claims 5, 16, 27 and 43, Kasahara teaches in paragraph [0018] that the transmission/reception devices interface with Gigabit Ethernet.

Regarding claims 6, 17, 28 and 44, Kasahara teaches in FIG. 1 WDM signal for transmission.

Regarding claims 7-8, 11, 18-19, 22, 29-30, 33, 45-46 and 49, Kasahara teaches in FIG. 1 an optical gain element (amplifier) 2b.

5. Claims 1-4, 6-8, 11-15, 17-19, 22, 25-26, 28-30, 33-34, 39-42, 44-46 and 49 are rejected under 35 U.S.C. 102(e) as being anticipated by Yin et al. (U.S. Patent Application Pub. 2002/0008913 A1).

Regarding claims 1, 12, 34 and 39, Yin et al. teaches in FIG. 2 an optical transmission system comprising a transponder 34 (optical transmission terminal of instant claim), an optical amplifier (signal processing unit) 38 and transmission path 26. The transponder defines a first optical interface for connecting with SONET LTE, ATM switch and IP router, and a second interface for connecting to the optical amplifier. The optical amplifier defines a third optical interface for connecting to the transponder and a fourth interface for connecting to the transmission path 26.

Regarding claims 2, 13, 24 and 40, Yin et al. teaches in paragraph [0032] that transceivers 22 and 24 are substantially identical and one direction transmission is shown as an example. Therefore, Yin et al. teaches bi-directional interfaces.

Regarding claims 3, 14, 25 and 41, Yin et al. teaches in FIG. 2 SONET LTE 32 for connecting to the first optical interface.

Regarding claims 4, 15, 26 and 42, Yin et al. teaches in FIG. 2 ATM switch 30 for connecting to the first optical interface.

Regarding claims 6, 17, 28 and 44, Yin et al. teaches in FIG. 2 WDM signal for transmission.

Regarding claims 7-8, 11, 18-19, 22, 29-30, 33, 45-46 and 49, Yin et al. teaches in FIG. 2 an optical gain element 38.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 9-10, 20-21, 31-32 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Way (U.S. Patent Application Pub. 2002/0021464) in view of Trischitta et al. (P. Trischitta et al., "Applying WDM Technology to Undersea Cable Networks", IEEE Communications Magazine, February 1998).

Way has been discussed above in regard to claims 1, 6-8, 11-12, 17-19, 22-23, 28-30, 33-34, 39, 44-46 and 49. The difference between Way and the claimed invention is that Way does not teach an undersea optical transmission path. Trischitta et al. teaches to apply long-haul WDM transmission technology to undersea applications and discloses in FIG. 2 the Africa ONE project. One of ordinary skill in the art would have been motivated to combine the teaching of Trischitta et al. with the optical transmission system of Way to apply the transmission path of Way for undersea applications because WDM allows undersea networks to use the wavelength

layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum (see page 63, left col., last paragraph). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use WDM optical transmission network of Way for undersea applications, as taught by Trischitta et al., WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum.

8. Claims 35-38 and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Way (U.S. Patent Application Pub. 2002/0021464) in view of Jacob et al. (U.S. Patent Application Pub. 2002/0178417 A1).

Way has been discussed above in regard to claims 1, 6-8, 11-12, 17-19, 22-23, 28-30, 33-34, 39, 44-46 and 49. The difference between Way and the claimed invention is that Way does not teach performance monitoring and dispersion compensation. Jacob et al. teaches in FIG. 2 a WDM transmission system. Jacob et al. teaches in paragraph [0039] to implement FEC within the optical DWDM layer and teaches in paragraph [0040] to use the FEC information for performance monitoring. Jacob et al. then teaches in paragraph [0064] to use FEC error correction statistics for optimizing dispersion of a tunable dispersion compensator used for composite DWDM signals. One of ordinary skill in the art would have been motivated to combine the teaching of Jacob et al. with the WDM optical transmission system of Way because performance monitoring for optimizing dispersion compensation reduces errors in the signals and improves signal quality. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to monitor performance and optimize dispersion compensator

in the DWDM layer, as taught by Jacob et al., in the WDM optical transmission system of Way because performance monitoring at the DWDM layer can be used for reducing impairment caused by wavelength multiplexing such as wavelength dispersion and gain tilting and dispersion compensation reduces errors and improves signal quality.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-33 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-11, 18-28, 35-45 of copending Application No. 10/621,115. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Claim 1 of copending Application '115 claims an optical transmission system comprising all the limitations of claim 1 of instant application. Claims 2-11 of copending Application '115 have identical or similar additional limitations as claims 2-11 of instant application, respectively. Claim 18 of copending Application '115 claims a method of transmitting an optical signal comprising all limitations of claim 12 of instant application. Claims 19-28 of copending Application '115 have identical or similar additional limitations as claims 12-22 of instant application, respectively. Claim 35 of copending Application '115 claims an optical interface device comprising all limitation of claim 23 of instant application. Claims 36-45 of copending Application '115 have identical or similar additional limitations as claims 24-33 of instant application.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Response to Arguments

11. Applicant's arguments filed 2 March 2005 have been fully considered but they are not persuasive.

Regarding the Way reference, the Applicant argues that the rejection implies that in Way the optical layer transport protocol employed along the transmission span immediately

downstream from amplifier 52 differs from the protocol employed by a subsequent transmission span. The Examiner disagrees. As admitted by the Applicant, claim 1 requires that the fourth interface to be configured to a different optical layer transport protocol than the third interface. The combination of multiplexer 26 and amplifier 52 converts a first optical layer transport protocol to a second optical layer transport protocol. Optical layer transport protocol is defined in FIG. 2 of instant application as a stack within the physical layer consisting of channel, multiplex section and amplifier section. Multiplexer 26 and amplifier 52 of FIG. 1 of Way changes the multiplex section and amplifier section and, therefore, changes the first optical layer transport protocol to a second optical layer transport protocol.

Regarding the Kasahara reference, the Applicant argues that optical amplifier 2b is configured to ensure that the optical signal continues to conform to the same protocol at all points along the transmission path. However, the combination of WDM multiplexer/demultiplexer 2a and optical amplifier 2b changes the multiplex section and amplifier section of the optical layer transport protocol and, therefore, changes a first optical layer transport protocol to a second optical layer transport protocol as required by claim 1.

The Applicant then argues that the optical amplifier 2b is one internal component of the WDM terminal 2—it is not a device distinct from the WDM terminal. However, the transmission/reception device corresponds to the optical transmission terminal of instant claim and the combination of WDM multiplexer/demultiplexer 2a and optical amplifier 2b corresponds to the optical interface device. As clearly indicated in FIG. 1 of Kasahara, there are connections between the optical multiplexer/demultiplexer and the transmission/reception device. Such

connections define interfaces for the optical multiplexer/demultiplexer and the transmission/reception device. Therefore, FIG. 1 of Kasahara reads on claim 1.

Regarding the Yin et al. reference, the Applicant argues that the optical amplifier 38 is one internal component of the transceiver terminal 22—it is not a device distinct from the transceiver terminal 22. However, the transponder 34 of FIG. 2 of Yin et al. corresponds to the optical transmission terminal of claim 1 and the optical amplifier 38 of FIG. 2 of Yin et al. corresponds to the optical interface device of claim 1. There are connections between the lasers of the transponder and the optical amplifier. These connections define interfaces for the transponder and the optical amplifier. Therefore, FIG. 2 of Yin et al. reads on claim 1.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
2 May 2005

M. R. Sedighian
M. R. SEDIGHIAN
PRIMARY EXAMINER